

What is claimed is:

1. An image forming apparatus comprising:
  - a rotatively driven image carrier;
  - 5 a primary transfer device that primarily transfers an image onto said image carrier;
  - a secondary transfer device that secondarily transfers the image on said image carrier onto a recording medium;
  - 10 a first issuing device that issues an image writing reference position signal for starting image formation based on a circumference that is a length of said image carrier in a direction of rotation thereof;
  - a second issuing device that issues the image writing reference position signal for starting image formation based on a detected reference position on the image carrier; and
  - 15 a selection device that selectively switches between signal issuing by said first issuing device and signal issuing by said second issuing device.
  - 20
2. An image forming apparatus according to claim 1, comprising a reference position detecting device that detects the reference position on said image carrier by detecting a marking attached to said image carrier, and
- 25 wherein said first issuing device is operable when image formation is carried out for a plurality of

colors, to determine image writing timing for a first color and issue the image writing reference position signal for the first color, and then determine image writing timing for a next color after lapse of a time  
5 period corresponding to one rotation of said image carrier later and issue the image writing reference position signal for the next color, and

wherein said second issuing device is operable when image formation is carried out for the plurality  
10 of colors, to determine the image writing timing for the first color with reference to the reference position of said image carrier detected by said reference position detecting device and issue the image writing reference position signal for the first color,  
15 and then determine the image writing timing for the next color with reference to the reference position of said image carrier redetected by said reference position detecting device and issue the image writing reference position signal for the next color.

20 3. An image forming apparatus according to claim 2, comprising:

a reference clock generating device that generates a reference clock signal;

a reference clock counting device that counts time  
25 with reference to one period of the reference clock signal as a unit time;

a circumference measuring device that measures the

circumference of said image carrier based on a time interval counted by said reference clock counting device based on the reference position detected by said reference position detecting device;

5           a storage device that stores the circumference measured by said circumference measuring device; and

          a line number counting device that counts a number of lines with reference to one period of a laser beam detect signal in a main scanning direction as one line  
10   period.

4.   An image forming apparatus according to claim 3, wherein the reference clock signal has a period corresponding to a time period less than the one line period.

15       5.   An image forming apparatus according to claim 3, comprising a conversion device that converts a count value, which has been counted in units of the reference clock signal by said circumference measuring device, the count value corresponding to the circumference of  
20   said image carrier, into a number of lines, and wherein said storage device stores the number of lines converted by said conversion device.

6.   An image forming apparatus according to claim 5, wherein said conversion device converts the count  
25   value into the number of lines, by finely adjusting an integer part of a conversion result in accordance with a decimal part of the conversion result, and said

storage device stores a value of the integer part finely adjusted by said conversion device.

7. An image forming apparatus according to claim 3, wherein said storage device stores the number of  
5 lines, and said first issuing device causes said line number counting device to count the number of lines stored in said storage device and determines issuing timing of the image writing reference position signal for the next color.

10 8. An image forming apparatus according to claim 3, wherein said line number counting device counts a predetermined number of lines corresponding to a time period from issuing of the image writing reference position signal for a final color to restart of  
15 conveying for a recording medium from a recording medium standby position located upstream of a position at which image formation is carried out.

9. An image forming apparatus according to claim 1, wherein said selection device selects the signal  
20 issuing by said second issuing device when a processing speed at which image formation is carried out is changed during image formation, and selects the signal issuing by said first issuing device when the processing speed is not changed during image formation.

25 10. An image forming apparatus according to claim 1, wherein the image forming apparatus is an apparatus selected from the group consisting of a copying machine,

a printer, and a multifunction apparatus having a combination of functions of a copying machine and a printer.

11. An image forming control method executed by  
5 an image forming apparatus that carries out image formation by primarily transferring an image onto a rotatively driven image carrier and then secondarily transferring the image on the image carrier onto a recording medium, comprising:

10 a first issuing step of issuing an image writing reference position signal for starting image formation based on a circumference that is a length of the image carrier in a direction of rotation;

a second issuing step of issuing the image writing  
15 reference position signal for starting image formation based on a detected reference position on the image carrier; and

a selection step of selectively switching between  
20 signal issuing in said first issuing step and signal issuing in said second issuing step.

12. An image forming control method according to  
claim 11, comprising a reference position detecting  
step of detecting the reference position on the image  
carrier by detecting a marking attached to the image  
25 carrier, and

wherein when image formation is carried out for a plurality of colors, said first issuing step comprises

determining image writing timing for a first color and issuing the image writing reference position signal for the first color, then determining image writing timing for a next color after lapse of a time period

5 corresponding to one rotation of the image carrier later and issuing the image writing reference position signal for the next color, and

wherein when image formation is carried out for the plurality of colors, said second issuing step  
10 comprises determining the image writing timing for the first color with reference to the reference position of the image carrier detected in said reference position detecting step and issuing the image writing reference position signal for the first color, and then  
15 determining the image writing timing for the next color with reference to the reference position of the image carrier redetected in said reference position detecting step and issuing the image writing reference position signal for the next color.

20 13. An image forming control method according to claim 12, comprising:

a reference clock generating step of generating a reference clock signal;

a reference clock counting step of counting time  
25 with reference to one period of the reference clock signal as a unit time;

a circumference measuring step of measuring the

circumference of the image carrier based on a time interval counted in said reference clock counting step based on the reference position detected in said reference position detecting step;

5           a storage step of storing the circumference measured in said circumference measuring step; and

          a line number counting step of counting a number of lines with reference to one period of a laser beam detect signal in a main scanning direction as one line  
10   period.

14. An image forming control method according to claim 13, wherein the reference clock signal has a period corresponding to a time period less than the one line period.

15           15. An image forming control method according to claim 13, comprising a conversion step of converting a count value, which has been counted in units of the reference clock signal in said circumference measuring step, the count value corresponding to the

20   circumference of the image carrier, into a number of lines, and wherein said storage step comprises storing the number of lines converted in said conversion step.

16. An image forming control method according to claim 15, wherein said conversion step comprises  
25   converting the count value into the number of lines, by finely adjusting an integer part of a conversion result in accordance with a decimal part of the conversion

result, and said storage step comprises storing a value of the integer part finely adjusted in said conversion step.

17. An image forming control method according to  
5 claim 13, wherein said storage step comprises storing the number of lines, and said first issuing step comprises causing said line number counting step to count the number of lines stored in said storage step and determining issuing timing of the image writing  
10 reference position signal for the next color.

18. An image forming control method according to claim 13, wherein said line number counting step comprises counting a predetermined number of lines corresponding to a time period from issuing of the  
15 image writing reference position signal for a final color to restart of conveying for a recording medium from a recording medium standby position located upstream of a position at which image formation is carried out.

20 19. An image forming control method according to claim 11, wherein said selection step comprises selecting the signal issuing in said second issuing step when a processing speed at which image formation is carried out is changed during image formation, and  
25 selecting the signal issuing in said first issuing step when the processing speed is not changed during image formation.



20. An image forming control method according to claim 11, wherein the image forming method is executed by an image forming apparatus selected from the group consisting of a copying machine, a printer, and a  
5 multifunction apparatus having a combination of functions of a copying machine and a printer.